

The Office Action representations that the referenced prior art has those three characteristics should be reconsidered by specifically addressing specific prior art excerpts showing that it does not have those three characteristics. This review should lead to the conclusion that the prior art does not have those three characteristics, after which the amended application should be reconsidered based on that conclusion. I hereby request this reconsideration, and request that the application be not final through this reconsideration.

In the remarks that follow, "Office Action" means the Office Action mailed 4-29-08, and "Prior Request" means the Request for Reconsideration mailed 12-8-07. Discussion of Office Action regarding independent claim 1 also applies to independent claim 71. These following remarks are intended to aid reconsideration of differences between the Office Action and the Prior Request regarding the referenced prior art's having or not having the three characteristics. For this purpose the following remarks first summarize the three characteristics, and then for each characteristic summarize differences between the Office Action and the Prior Request and pose questions requiring answers for the resolution. However, this reconsideration should include review of the Prior Request, which contains fuller discussion of prior art deficiencies regarding the three characteristics and adverse effects and consequences of the deficiencies.

### **The Three Essential Characteristics**

The three characteristics at issue, essential to the claimed invention and lacking in the prior art, are:

1. Probabilistic analysis of an entire investment time horizon from start through periods of withdrawals to meet goals. This is essential because for most investors, goals include investment withdrawals in each of multiple periods, such as income in each of many retirement years and payments for each of four college years for each child, as well as a final balance after all the withdrawal years.
2. Probabilistic analysis that shows and incorporates effects of period-to-period return-rate variation, achieved by the claimed invention through period-by-period simulation. This is essential for a valid process for determining result probabilities, especially in plans including periods of withdrawal, because (a) according to the rule of reversion toward the mean, for amounts held in the investment for fewer years, the ranges of uncertainty for the actual return-rate average are wider, and (b) for a given expected return rate, period-to-period variations lower multi-period results ("deviation drag"). It is also essential for informing the investor of investments' prospects for period-to-period variations along the way to goals.
3. Production of probabilistic investment analyses and comparisons in three aspects of future results for an investor's plan and goals – probability of meeting the goals, probabilities for how far above or below the goals the results may be, and prospects for period-by-period value variation along the way due to return-rate variations. Because individual investors have quite different priorities among these measures, including wide differences in attitudes

about period-to-period variations, this characteristic is essential for the claimed invention's very purpose: to inform each investor for considering tradeoffs among these aspects of probabilistic performance to judge an investment that best fits his plan, goals, and priorities.

It is these three characteristics that the Examiner's first review helped the applicant clarify in the amended application, and it is also these three characteristics where the representations of the prior art in the Office Action conflict with the discussion and specific excerpts in the Prior Request.

### **The Differences, and Questions for their Resolution**

Below, for each of the three essential characteristics differences between the Office Action and Prior Request are summarized, with questions requiring answers for resolution.

#### **Regarding characteristic # 1**

In the Office Action representation of the time horizon for which the Edesess prior art performs probability analysis, on page 2 in lines 5-9 of its discussion of claim 1 it says that Edesess addresses "a time horizon of a plural number of investment periods from the time of an initial investment *through times of withdrawals for meeting goals...* and an amount of a final wealth goal at the end of the time horizon" (emphases added).

However, among excerpts from Edesess presented in the Prior Request and included in the Office Action reference are the following:

*column 6 lines 44-48: "The wealth goals are calculated as the present value liabilities, as of the horizon dates, for the future planned withdrawals from the investment account for retirement income, bequest, and any other post-horizon expenditures."*

*column 6 lines 39-40: "The horizon date for each scenario is generally the investor's retirement age."*

*column 4 lines 46-50: "Step 102. This target scenario is in the form of (1) net amounts invested annually between the present date and a future horizon date T1 and (2) a wealth goal at time T1 representing investor's liability for future expenditures after T1."*

*column 5 lines 8-11: "These future levels of wealth accumulation may be derived as present values of future spending levels planned to occur subsequent to the horizon dates."*

*column 5 lines 34-35, defining the term for annual cash flows in the probability analysis equation: "C<sub>i</sub> is the net addition (contribution) to assets at the beginning of the i<sup>th</sup> year."*

All these excerpts show that the time horizon addressed in the Edesess probability analysis excludes periods in which the investment is held for withdrawals, leaving that to present value calculation.

**Question:** *Is it correct to represent that the time horizon addressed in Edesess probability analysis extends "through times of withdrawals for meeting goals"?*

**Answer:** *No. Edesess explicitly excludes such periods from its probability analyses.*

Without consideration of probabilities of those periods of withdrawals to meet goals, Edesess does not and cannot determine probabilities of meeting those goals.

One might argue that Edesess could be changed to include in its probability analyses periods when the investment is held for withdrawals. For this there are two answers:

1. Edesess does not do so, and should not be represented as doing so.
2. If the time horizon of Edesess probability analysis were changed to include periods when the investment is held for withdrawals, Edesess would produce results that are incorrect and misleading to investors, due to its deficiencies in characteristic 2, addressed below.

## Regarding characteristic # 2

In the Office Action representation of the Edesess method of analysis, on page 3 lines 3-14 regarding claim 1 it says that Edesess analyzes probabilities for each portfolio “through simulation...each period...applying for each portfolio a return rate determined for that period based on the portfolio’s expected return rate and return-rate standard deviation...providing a basis for comparing the portfolio plans in...prospects for period-by-period path of value variation and development through the time horizon.”

However, study of the Office Action reference shows that the method used by Edesess for its probability analysis is not simulation, but instead the equation shown as an excerpt from Edesess in the Prior Request:

Column 5 line 29

$$f(r) = V_0(1+r)^n + \sum_{i=0}^{n-1} C_i(1+r)^{n-i} - V_n$$

In this equation, the term  $r$  represents a return rate applied for all periods with no period-to-period variation.

**Question:** *Is it correct to represent that Edesess performs its analyses of portfolios “through simulation”?*

**Answer:** *No. Instead it uses an equation with a single return rate  $r$  for all periods.*

In actual performance, investments’ return rates do vary from period to period, and when investments’ prospects are defined in terms that include return-rate standard deviations, the very meaning of the standard deviations is that there have been and will be period-to-period variations. The very purpose of period-by-period simulation is to reflect such variations and incorporate their effects on future-result probabilities. By using its equation instead of simulation, Edesess fails to reflect these variations and their effects.

**Question:** *Is it correct to represent Edesess as “providing a basis for comparing the portfolio plans in...prospects for period-by-period path of value variation and development through the time horizon”?*

**Answer:** *No. Edesess fails to consider period-to-period return-rate variations, which cause value variation.*

To determine a portfolio's probability of meeting a future goal, Edesess determines the probability that the portfolio's average return rate will be at least high enough. For determination of that probability, the average-return-rate probability is determined for the length of time shown as an excerpt in the Prior Request and included in the Office Action reference:

*column 5 lines 65: "Over the horizon period"*

According to the statistical rule of reversion toward the mean, for more periods the standard deviation of the return-rate average is smaller – or stated the other way, for fewer periods the standard deviation of the return-rate average is larger, meaning more uncertainty and risk.

So if portions of the investment were withdrawn in periods within the time horizon, thus being invested for less than the total time horizon, probabilities determined by Edesess would not be correct. Instead they would represent understating of uncertainty and risk.

Furthermore for a given return-rate average, period-to-period return-rate variations make multi-period results lower than they would be if the average rate occurred every period. This can be illustrated by comparing two-year results at 10% each year (1.21) with results at 20% one year and 0% the other year (1.20). By using its equation with no period-to-period return-rate variations, Edesess fails to reflect this "deviation drag" effect of return-rate variations in lowering multi-period results, and thus produces incorrect, too-optimistic multi-period results.

**Question:** *If Edesess were changed to include in its probability analysis periods of investment withdrawals to meet goals, would it apply correct analyses producing valid results?*

**Answer:** *No. Edesess would apply incorrect analyses producing incorrect results, producing probabilities based on overstated expected results and understated uncertainties and risks.*

### **Regarding characteristic # 3**

In the Office Action representation of Edesess purpose and output, on page 2, lines 1-3 regarding claim 1, it says Edesess "discloses a method that relates to informing investors for judging, selecting, and maintaining informed commitment to investment portfolios with optimal prospects for their long term investment plans, goals and priorities"; and on page 3 lines 3-14 says that it analyzes probabilities for each portfolio "through simulation... providing a basis for comparing the portfolio plans in various aspects of prospects for the financial plan and goals including probability that the final wealth will be at least as great as the final wealth goal, probabilities for how far above the goal the final wealth result may be, probabilities for how far above the goal the final wealth result may be, and...prospects for period-by-period path of value variation and development through the time horizon."

These words reflect well the claimed invention, which is based on understanding that different investors place very different priorities on the measures cited, and in particular many investors give major attention to short-term ups and downs. So the purpose and function of the claimed invention is to present investors comparisons of investments in all the measures mentioned, including period-by-period paths of value variation and development, so each

investor can judge a selection that fits his plan, goals, and priorities, and can understand what may be ahead both short and long term to maintain commitment to a good choice.

However, the reference provided by the Office Action in support of this description shows Edesess to be based on the opposite purpose of having Edesess and the computer make the portfolio selection, according to a fixed selection rule determined by the Edesess inventor and used for every investor. In that Office Action reference is the following excerpt in the Prior Request, describing the fixed portfolio selection method that Edesess is designed to impose on every investor:

*Column 2 line 65 to column 3 line 7: "The unique asset allocation to the major asset classes is found that meets the following criteria: first, if any allocation achieves the required fallback rate of return with at least the required probability, then among those allocations that satisfy this criterion the unique one with the maximum probability of achieving the required rate of return is found; second, if no allocation achieves the required probability of the fallback rate of return, then the allocation is selected that maximized this probability, though less than the required probability."*

Furthermore, the Office Action itself states, on page 3 lines 16-17, "Edesess fails to explicitly teach providing at least a first comparison of the portfolios." Comparisons, plural, is exactly what is required to inform an investor for his choice. This Office Action statement provides a clearest illustration that Edesess is not designed for the purpose of informing the investor for his choice according to his priorities, but for the opposite purpose of Edesess and computer making the choice based on the Edesess inventor's notion of what every investor's priorities should be.

The Prior Request presents, on page 11 and top of page 12, a simple example illustrating how, in comparing three portfolios for one simple plan and goal, the portfolio selected according to the fixed Edesess method would rank in the aspects of probabilistic result prospects stated in the Office Action (page 3, lines 10-14). Of the three portfolios considered, the one selected by the fixed Edesess method ranks worst in probability of meeting the goal, worst in risk of falling short of the goal by 10% or more, and worst in prospects for size of one-year drop along the way. The Edesess notion of investment selection rule may be fine for some investors, but certainly does not inform the investor of how investments compare in various measures for the investor's choice.

**Question:** *Is it valid to describe the purpose and function of Edesess as informing investors for judging and selecting portfolios by providing a basis for comparing them in various aspects of prospects for the investor's plan and goals as stated in the Office Action?*

**Answer:** *No. Edesess is designed for the opposite purpose and function, not to inform the investor for his portfolio choice but for Edess and the computer to make the portfolio choice, according to a fixed selection rule to be imposed for every investor.*

Addressing the failure of Edesess to provide any portfolio comparison, the Office Action provides an excerpt from another piece of prior art, Wallman (column 6 lines 1-65 and column 9 lines 19-65), and concludes "Therefore it would have been obvious to one of ordinary skill to modify the teachings of Edesess to include providing at least a first comparison of the portfolio plans in a first criterion, that criterion being probability that the final wealth will meet or exceed the goal...to inform the investor for selecting portfolios for comparison in other aspects of prospects for the plan and goals, selection of a portfolio the investor judges optimal for his plan, goals, and priorities and the investor's informed commitment to the choice."

**Question:** *Would application of disclosures in the Office Action's Wallman reference to analyses of Edesess provide the portfolio comparisons specified in the Office Action's description of Edesess (pages 2 and 3) to inform the investor for his judgment of a portfolio optimal for his plan, goals, and priorities and his informed commitment to the choice?*

**Answer:** *No. The most fundamental reason is that for every investor investing for retirement, children's education, or other multi-period goals, the analyses of Edesess are incorrect and dangerously misleading, in several fundamental ways. Failing to consider probabilities of investment withdrawal periods, they do not even address probabilities of meeting those goals. The probabilities they do produce, for results before the periods of goals, are too optimistic in expected results due to failure to include effects of "deviation drag." These probabilities also understate uncertainty and risk, due to failure to consider that for amounts held for less than the total time horizon, return-rate averages have greater uncertainties. Furthermore, for the pre-goals time horizon that Edesess addresses in terms of probabilities, its analyses provide no information for assessing and comparing investments in prospects for period-to-period variations affected by return-rate variations, which for most investors is an essential consideration in portfolio selection.*

*Furthermore, disclosures in the Wallman reference appear irrelevant to production of the desired portfolio comparisons for portfolio selection. Its purpose is defining desired specifications for, and determining price of, insurance on a particular portfolio. In the reference, nothing about comparing portfolios for portfolio selection can be found. The word comparison or compare cannot even be found.*

### **Summary**

The claimed invention is designed for individual investors, most of whom invest in hopes of enabling withdrawals for future goals such as income in retirement years and meeting expenses of children's college years. Its purpose is to inform investors for selection of investments offering optimal probabilistic prospects for their plans, goals, and priorities. For this purpose it performs analyses with the following features:

1. Assesses investments in probabilities for the entire time horizon over which investment is to be held, including periods of investment withdrawal to meet goals, and thereby assesses investments in result probabilities for the investor's goals.;
2. Bases its analyses on probabilistic year-to-year return-rate variations, and thereby includes effects of these variations to produce valid assessments of result probabilities, and also informs the investor of prospects for period-to-period value variations along the way.
3. Assesses investments for comparison in three aspects of probabilities for the investor's plan and goals – probability of meeting the goals, probabilities for how much higher or lower results may be, and probabilistic prospects for year-by-year return rates along the way – to inform investors for judging and selecting investments that offer best prospects for their plans, goals, and priorities.

In each and every one of these features, Edesess is fatally deficient. While Edesess is suitable for simple investment plans, compared to the claimed invention and the investment-selection needs of most individual investors for whom the claimed investment is designed, Edesess is fatally deficient and its use would be dangerously misleading.

Based on the preceding remarks and the Prior Request, the fatal deficiencies of Edesess relative to the claimed invention should be recognized. With Claims 1 and 71 being unique in comparison to the prior art including Edesess with respect to the features summarized just above, as stated in the independent claims 1 and 71 and described in the amended application and the Prior Request, the independent claims 1 and 71 should be allowed.

If the rejection of the independent claims 1 and 71 should be continued, it is respectfully requested that it be described and illustrated with particularity how the questions posed herein can be answered positively, how Edesess can be shown to have the three characteristics addressed herein, and how assessments and comparisons conforming to the features 1, 2, and 3 above are produced using Edesess. In the absence of a prima facie showing to that effect, claims 1 and 71 should be allowed.

With claims 1 and 71 allowable, the other claims as amended which are dependent on claims 1 and 71 should be allowed in view of allowability of claims 1 and 71.

Therefore, reconsideration and allowance are requested.

Respectfully submitted,

Date: 6-27-08

  
\_\_\_\_\_  
W. Richard Purcell, Jr.